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Marine Corps Energy: Instilling an Ethos of Energy Efficiency

by

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MARINE CORPS ENERGY: INSTILLING AN ETHOS OF ENERGY EFFICIENCY

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The Commandant of the Marine Corps (CMC) stated that the Marine Corps must change the way it uses energy in order to rebalance and prepare for the future. Over the past years at war, the Marine Corps has become more lethal, but at a price of becoming too heavy and slow. Thus, a new energy strategy must outline ways to optimize expeditionary capabilities across all warfighting functions. Many of these courses of action require changes to existing doctrine. However, unless the Marine Corps changes its culture and instills an ethos of efficient and effective use of energy, changes in doctrine alone will not bring about fully the required transformation. This paper examines why the Marine Corps needs to change its energy culture, specifically, the way Marines think about and employ energy on the battlefield. Secondly, the work evaluates the actions taken by the Marine Corps against the stages of creating major change John Kotter recommends in *Leading Change* to determine whether those actions are sufficient to bring about the required expeditionary energy culture. Preliminary indications show that the Marine Corps is successfully progressing along the eight-stage process, currently in stage five with some actions already in stage six.

MARINE CORPS ENERGY: INSTILLING AN ETHOS OF ENERGY EFFICIENCY

> As a Corps, we have become more lethal, yet we have also become increasingly dependent on fossil fuel. Our growing demand for liquid logistics comes at a price. By tethering our operations to vulnerable supply lines, it degrades our expeditionary capabilities and ultimately puts Marines at risk. To maintain our lethal edge, we must change the way we use energy.
>
> —General James F. Amos
> 35th Commandant of the Marine Corps, May 2011

Recognizing that energy efficiency will increase the Corps' combat effectiveness and save lives, the Commandant of the Marine Corps (CMC) stated the Corps must change the way it uses energy in order to rebalance the Corps and prepare for the future.[1] Over the past years at war, the Marine Corps has become more lethal, but at a price of becoming too heavy and slow.[2] In October 2009, the CMC created the USMC Expeditionary Energy Office (E2O) with the mission of analyzing, developing, and directing a Marine Corps energy strategy to optimize expeditionary capabilities across all warfighting functions. Since its inception, the E2O has identified several critical gaps that prevent the Corps from achieving the goals of its energy strategy. As a result, the E2O determined various required courses of action to fill these gaps. Many of these actions include changes to existing doctrine. However, unless the Marine Corps changes its culture and instills an ethos of efficient and effective use of energy, revisions in doctrine alone will not bring about fully the required transformation. This paper examines why the Marine Corps needs to change its energy culture, specifically, the way Marines think about and employ energy on the battlefield. Secondly, the work compares the actions taken by the Marine Corps with the eight stages of creating major

change John Kotter recommends in *Leading Change* to evaluate whether or not these actions are sufficient to bring about the required expeditionary energy culture change for the 21st century.

Current Energy Posture

In the 2010 National Security Strategy document, the President of the United States placed energy as a top national priority and posited, "our development of new sources of energy will reduce our dependence on foreign oil. Our commitment to deficit reduction will discipline us to make hard choices, and to avoid overreach."[3] He further added, "we must transform the way that we use energy—diversifying supplies, investing in innovation, and deploying clean energy technologies. By doing so, we will enhance energy security, create jobs, and fight climate change."[4]

The reasoning behind the President's conclusion stems from the growing use of, and reliance on, fossil fuels in the United States. Many reports warn that our addiction to fossil fuel is becoming a threat to national security and international stability. The US Energy Information Administration reports that global demand for energy will grow over 53 percent over the next twenty-five years, with the US demand expected to account for 31 percent of the total world energy consumption. [5] Eighty-one percent of the nation's primary energy consumption comes from fossil fuels - coal, oil, and natural gas.[6] According to the BP Statistical Review of World Energy, Americans consume more oil than any other nation. In 2010, the United States consumed more oil than Russia, China, Germany and all of Africa combined.[7] Today, the United States imports about half of its oil needs.[8] The reliance of the United States on foreign oil imports to satisfy its dependency on fossil fuels presents a national security challenge.

The Department of Defense (DOD) is the nation's single largest consumer of energy.[9] Approximately 71 percent of DOD's total energy costs are for petroleum-based fuel for mobility, while 25 percent is allocated for buildings and installations.[10] Volatile oil prices make a dramatic impact on our defense budgets. Thus, the DOD must program or reprogram large sums of money to meet basic energy operating costs, shifting funding away from other priorities. An increase of $10 per barrel for the Department of Defense, at today's consumption levels, represents an increase equivalent to the entire Marine Corps' 2010 procurement budget.[11]

Volatile fuel prices, increased budget pressures, and national security concerns have elevated the importance and visibility of the issue of energy efficiency within the United States and DOD. As it will be for all the US armed forces, increasing mechanization and electrification of warfighting technologies invariably will fuel further the Marine Corps' energy requirements. For example, before the September 11, 2001 terrorist attacks, a Marine infantry battalion utilized 64 Highly Mobile Multipurpose Wheeled Vehicle (HMMWVs). Now, the same battalion maintains 173 Mine Resistant Ambush Protected vehicles (MRAP) and MRAP All Terrain Vehicles (M-ATV). Due to their heavy armor, these new vehicles reduced fuel efficiency by 30 percent across the fleet. Additionally, the Marine Corps ships more than 100,000 bottles of water a day to Afghanistan and then further redistributes them to the end user. Thus, fuel and water make up more than 70 percent of the Marine Corps logistics burden.[12] The expeditionary agility and nimbleness in armed conflicts requiring mobility over long distances and across rugged terrain with vehicles tethered to fossil fuel supplies will further increase the Marine Corps' energy costs.[13]

Indeed, the entire DOD depends on petroleum fuels for military operations. This great demand for energy significantly affects the current and future security of our nation. This dependency on fossil fuels constrains options, both on our military bases at home and in our operational forces overseas. As one Department of Energy report noted, “present energy use patterns impact DOD global operations by constraining freedom of action and self-sufficiency, demanding enormous economic resources, and putting many lives at risk in associated logistics support operations in deployed environments.”[14] In the 2011 National Military Strategy, the Chairman of the Joint Chiefs of Staff (CJCS) directed the “Forces must become more expeditionary in nature and will require a smaller logistical footprint in part by reducing large fuel and energy demands.”[15] This dependence places our mission-critical operations at risk. Any disruption to oil supplies or power grids can have detrimental effects to the military’s ability to respond to crises and to conduct essential training. The fossil fuel and energy costs of the United States and Department of Defense are staggering. In a 2009 study of total fuel consumption by US Government agencies, the Air Force accounted for 52 percent, the Navy for 33 percent, and the Army for seven percent. The study, however, did not identify the Marine Corps fuel consumption, incorporating it instead in the category of “other DOD.”[16] Thus, any changes within the Corps to conserve energy would be insignificant on the DOD level, given small percentage of fuel usage.

This does not mean, however, that it is insignificant to the Commandant and the warfighters. Marine Corps operational forces remain tethered to fossil fuel supplies, a vulnerability that slows reaction and response time as well as adversely affects the entire logistical effort for timely delivery of necessary supplies. A report of the Marine

Expeditionary Energy Assessment Team in August of 2009 stated the Marine Corps today consumes in excess of 200,000 gallons of fuel per day in Afghanistan.[17] Additionally, each of the more than 100 forward operating bases in Afghanistan requires a daily minimum of 300 gallons of diesel fuel.[18] The increased mechanization and armament of our forces has made us more lethal, but it has done so at a high additional cost in fuel. This constraint creates an enormous logistical burden for our expeditionary forces. This increase also has grave consequences on our logistic supply trains and those service members who convoy the vital fossil fuels and water to our expeditionary forces.

Indeed, according to Marine Corps Energy office, the total cost of energy used to sustain our forces with "water and liquid fuel in war can be measured in many ways: number of convoys at risk on the road, IED incidents, patrols diverted for force protection of convoys, operations delayed waiting for resupply, weight and volume exceeding air and sealift capacity, and dollars per barrel."[19] As the Deputy Under Secretary of Defense for Installations and Environment testified before the Senate Homeland Security and Governmental Affairs Committee, "for fuel used in the theater of war, the real cost is even higher than the price implies because it is so expensive to transport and protect the fuel.[20] Our nation's adversaries recognize this growing vulnerability and target fuel convoys, knowing the second, third, and fourth order effects of disrupting our supply chain.[21] Consequently, one of every fifty convoys transporting fuel and water in a combat environment results in the injury or death of a Marine.[22]

Why Change

The Marine Corps would benefit tactically and strategically if it changes its approach to energy. Conserving fuel, or using alternative fuel, clearly is important to the national security on many levels. To become a more effective and efficient force, the Marine Corps must reduce its logistical tail. Even if fuel was abundantly available, the Corps needs to move beyond the use of energy sources that expand its logistical tail and avoid the vulnerability inherent in requirements for multiple convoys. Reducing the Corps' operational energy use will allow forces to operate in an austere environment with less of a logistical burden. Decreasing the number of convoys will expose the operating forces to enemy attacks less frequently. Thus, efforts to be fast, lethal and austere, as the nation's expeditionary force in readiness, the Marine Corps desires to employ alternative fuels that will allow self-sustainability for longer periods of time. Changes in the way the Marine Corps uses energy ultimately will increase its lethality, giving the Marines an edge over their adversaries.

Implementing the required changes in attitude and culture will not be easy and will require great effort. Nonetheless, the Commandant has determined this change is necessary and has made it a priority.[23] He champions the image of Marines as modern-day Spartans, with the goal of returning to Spartan Roots - fast, lethal and austere.[24] Especially during this era of budget cuts, actions taken to change the culture and decrease costs will pay great dividends. A culture change can result from various methods. John P. Kotter's approach reveals one recognized way to a successful transformation.

John Kotter's Eight Stages to Change

The rest of this paper will explore John Kotter's approach to leading change. Many authors have written books outlining ways and processes to change an organization's culture. Kotter, a Harvard Business School professor, is an author and world renowned as an authority on leadership and change. He posited there are eight stages through which organizations need to progress to change its culture successfully:

1. Establish a Sense of Urgency
2. Create a Guiding Coalition
3. Develop a Vision and Strategy
4. Communicate the Change Vision
5. Empower Broad-based Action
6. Generate Short Term Wins
7. Consolidate Gains and Produce More Change
8. Anchor New Approaches in the Culture[25]

This work will apply each of Kotter's stages to the Marine Corps' ongoing efforts to change its energy culture in constructive ways.

Establishing a Sense of Urgency

Kotter argues that the first step needed to ignite change in an organization is to establish a sense of urgency. Change demands significant effort by many people within the organization. This "work requires great cooperation, initiative, and willingness to make sacrifices."[26] Without creating a sense of urgency, only complacency remains, dampening the desire to give that extra effort.[27] When the urgency of the need for change does not trump the sacrifice required, people resist change. Kotter advises that

organizations either identify or create a crisis to instill a sense of urgency. The messages of the President, CJCS, and CMC all warn strongly that if we continue down the path of reliance on fossil fuels and refuse to change to become more energy efficient, the nation may confront severe consequences. In more practical terms, convoys hauling fuel and water put lives in harm's way. The aforementioned statistic of losing or injuring a Marine every fifty convoys is alarming. There are many ways to reduce that number, all of which will take an effort by all Marines to use energy more efficiently and effectively on the battlefield. The Marine Corps cannot afford to keep doing business as usual.

Marine Corps leadership perceived that urging Marines to change their energy use would require more than creating a crisis around losing Marines in convoys. The young Marines understand combat and the risks of combat, including the loss of lives. What they covet is more lethality in combat.[28] To that end, the leadership recognized the need to focus the message to show Marines how planning and using energy more efficiently translates into greater combat effectiveness on the battlefield. For example, the E2O reported that Marines using solar panels in Marjah to generate power wanted more panels because they were quieter than standard generators and the Marines could better listen for the enemy.[29] The Marines viewed the changes they made primarily in terms of an added advantage over the enemy, not as fuel savings. Nonetheless, even little changes of this sort gave Marines increased maneuverability and lethality, decreased their susceptibility to attack, all with using less fossil fuels.

In fulfilling Kotter's first stage, "creating a sense of urgency," the CMC creatively focused a change message to the Marines. Besides stressing the importance of change

because of lives lost due to fuel and water convoys, the message concentrated on the end result of greater lethality and combat effectiveness on the battlefield. Because Marines desire increased levels of firepower, they will adapt to most any system and process that will give them an edge over the enemy.

Creating a Guiding Coalition

After establishing a sense of urgency, Kotter next advises the creation of a guiding coalition. Creating change requires a powerful force to initiate and keep the momentum. This is not a "one-man" job. A guiding coalition should include a mix of personnel with both leadership and managerial skills. Working together, the leader drives the change, while the manager organizes and controls the process.[30] The members of the team are responsible leading the change through the remaining stages in Kotter's process.

In October 2009, the Commandant of the Marine Corps established the USMC Expeditionary Energy Office (E2O). This office serves as the guiding coalition for the energy culture change in the Marine Corps. The office performs three main missions: 1) "Analyze, develop, and direct the Marine Corps' energy strategy in order to optimize expeditionary capabilities across all warfighting functions," 2) "Advise the Marine Requirements Oversight Council (MROC) on all energy and resource requirements, acquisitions, and programmatic decisions," and 3) "Serve as the functional advocate for operational energy."[31]

Initially, the nascent program office consisted of only a few people - one colonel and a couple of civilians on loan to the office from other agencies. Recognizing the challenges and work that lay ahead, Colonel Robert Charette steadily built a team and

grew the program. As with most military organizations, he did not have the luxury of choosing personnel based on expertise or credibility. He only asked for people who had a positive attitude and willingness to work hard.[32] Clearly, Col Charette brings the leadership to drive the guiding coalition. He communicates a passion for his work and energizes the team to continue the push for change. Since then, he added civilians to his team and other uniformed service members, giving him additional leaders and managers to guide, organize, and control the process. The current table of organization for E2O consists of four military personnel, three civilians and three contractors.[33]

The Marine Corps and the Navy acknowledged their lack of expertise in energy planning and integration at all levels. To fill that gap, the Naval Postgraduate School (NPS) developed a new program specifically focused on energy. The graduates of the program will "ensure that energy is a fully-integrated awareness into strategy, tactics and operations."[34] In the fall of 2012 or beginning of 2013, three majors from NPS will join Col Charette and the E2O.[35] These officers will enhance the leadership and expertise that will round out the Marine Corps' guiding coalition.

The guiding coalition consists of a team of professionals with the right number and combination of leaders and mangers. They are charging ahead, blazing the path that will lead the Corps on its transformation to an energy efficient culture. This team satisfies Kotter's stage two, building a guiding coalition.

Developing a Vision and Strategy

Kotter's third stage calls for developing a feasible vision and strategy to "clarify the general direction for change,…motivate people to take action in the right direction, and help coordinate the actions of different people."[36] An effective vision, he wrote,

"identifies what in the environment is important, what requires action and what action should be taken."[37] This stage in the process requires a focus of effort by the leadership team. Without a clearly stated vision of goals or desired endstates, any change will eventually stall and become nothing more than taskers and projects with no apparent direction.[38]

From 2009 to 2011, Col Charette and his team organized, researched and formulated a vision and strategy. In May 2011, the E2O published the United States Marine Corps Expeditionary Energy Strategy and Implementation Plan, "Bases to Battlefields."[39] This plan laid the foundation, and communicated the CMC's vision, mission, goals, and objectives for expeditionary and installations energy use.

The energy strategy lays out a clear vision: "to be the premier self-sufficient expeditionary force, instilled with a warrior ethos that equates the efficient use of vital resources with increased combat effectiveness."[40] This vision points the way to the creation of an ethos that instills in all Marines an understanding of energy use, both in terms of the conservation of vital resources and their use in the most effective ways.

The plan breaks the mission into three parts: 1) Procure and use more efficient equipment, 2) Increase our use of renewable energy through innovation and adaptation, and 3) "Most critically, we must change the way we think about energy – our warrior ethos must equate the efficient use of energy and water resources with increased combat effectiveness."[41]

The energy strategy stresses the importance of restoring the balance to the Marine Corps as a fast, lethal, and austere force. Over the last ten years, the Corps has become more lethal, but at the price of being too heavy due to increased mechanization

and weapons systems requiring greatly increased energy requirements, as well as increasing numbers of highly sophisticated fossil fuel powered communication systems. These tactical enhancements require larger and more frequent logistical convoys to supply them on the battlefield. The increasing demand for fuel has thrown the operational force off balance; it has become more lethal, but slower. The situation demands changes to the logistical processes that will support more effectively a lighter and faster force with the same or greater lethality. [42]

The energy strategy also outlined eight specific goals and objectives needed to obtain operational energy efficiency. The first of these eight goals is "Embed Expeditionary Energy into the USMC Ethos."[43] This most prominent change, changing a culture, will take leadership to develop, foster and sustain. The other seven goals mainly focus on changing or using more efficient equipment and material for improved energy use.

The Marine Corps excelled at completing Kotter's stage three, developing a vision and strategy. Creating a vision and strategy is an investment "in creating a better future."[44] The senior leaders of the Marine Corps identified specific areas of concerns, emerging from a full understanding of their strategic vision for the future, and addressed them in substantive ways. As the leaders in the energy transformation, the E2O then produced an enduring, attainable vision to guide the transformation with a solid, detailed strategic implementation plan to back it up. Together, the vision and strategy provide the way ahead, listing specific areas of concern that need to be addressed for the change to occur. The investment in time and effort to do this step correctly will pay off in dividends later down the road. Successful completion of the first three stages in

Kotter's change process lay a strong foundation for the Marine Corps to continue to make progress towards an energy efficient ethos.

Communicating the Change Vision

Kotter's fourth stage in the change process is "Communicating the Change Vision." Elements for successfully communicating the vision include simplicity of message, multiple forums for communication, and explanation of seeming inconsistences.[45] Under communicating the vision may result in failure.[46] Thus, repetition by senior leaders is essential; it increases the likelihood the entire Marine Corps receives the message, and underscores its importance to the combat mission.

The Marine Corps E2O uses many various approaches to communicate the vision and strategy. The team developed an ethos package that highlights how effective use of resources equates to combat efficiency and greater lethality. Professional military education (PME) courses at various Marine Corps schools, such as Expeditionary Warfare School (EWS) and the Sergeants' Course, present this ethos package. Furthermore, high profile events such as Sergeants Major symposiums and commanders' courses also discuss this new ethos.[47]

Marines test energy awareness and saving techniques at Enhanced Mojave Viper in Twenty-nine Palms, California, to deploying Marines. These new ideas came from the Marine Corps Experimental Forward Operating Base (ExFOB) process that "identifies and evaluates energy efficient capabilities that can reduce risks to Marines and increase combat effectiveness."[48] This showcases and teaches Marines, from the individual to the battalion level, about energy efficiency equipment and techniques. All levels of training, from The Basic School (TBS) for newly commissioned lieutenants to

Marine Combat Training (MCT) for new enlistees, teach values-based learning objectives that instill an expeditionary, energy efficient warrior ethos. These approaches communicate the vision and weave the energy efficient warrior ethos through the fabric of the Marine Corps.

Of course, the vision and strategy can never be over-communicated, especially within a large organization such as the Marine Corps. From articles and videos on the Marine Corps homepage and *Marine Corps Times*, to speeches by the CMC and Col Charette, the CMC and the E2O constantly communicate the vision and strategy. The feedback Col Charette received from the battlefield on the new energy equipment tested by the Marines pleased him. "The young Marines get it," says Col Charette, "they understand that effective use of energy equates to increased combat power."[49] The Marine Corps' efforts in communicating the vision are producing results.

Empowering Broad-based Action

The fifth stage in Kotter's book is "empowering broad-based action." The purpose of this step "is to empower a broad base of people to take action by removing as many barriers to the implementation of the change vision as possible."[50] Kotter recognizes that even though employees may support the necessary change, they may encounter barriers to action. The biggest obstacles organizations usually exhibit include structural impediments, lack of skills, poor supervisors, or systems and processes that hinder the change.[51]

To identify some of these challenges, the Marine Corps E2O conducted an in-depth study to identify gaps and requirements to implement the energy strategy and accomplish the mission and goals. In coordination with the Combat Development and

Integration (CD&I) office, the E2O conducted a Capabilities Based Assessment (CBA). The capabilities that E2O chose to assess either produced or consumed energy or water, or could benefit by the ability to produce energy through the management or usage of waste. This assessment focused on expeditionary capabilities, specifically operations from the sea, during the first 120 days ashore.[52] With an endstate of meeting the Marine Corps' energy goals, the assessment overlaid the current capabilities with required future capabilities. This extensive research and analysis of lessons learned documents and after action reports regarding current energy, water and waste activities showed existing gaps identified and grouped under the six war fighting functions: fires, maneuver, command and control, intelligence, logistics, and protection. For instance, gaps in maneuver showed the force lacked sufficient capacity to provide efficient, individual power and water that reduces the Marines combat load. Gaps in command and control showed a lack of adequate visibility, analysis and management tools to control expeditionary energy, water, and waste usage.[53]

To inform the Marine Requirements Oversight Council (MROC) of the results of the study, the E2O published the United States Marine Corps Expeditionary Energy, Water, and Waste (E2W2) Initial Capabilities Document (ICD) in September 2011. The document "codifies the CBA and describes E2W2 capability needs, gaps, and solution approaches that support Marines across the range of military operations (ROMO) through 2025."[54] The publication, the first of its type produced by the Marine Corps, provides the starting point from which to address and put into plan solution sets to achieve the mission of a true Expeditionary Force.

In the Initial Capabilities Document (ICD), the Marine Corps recognizes many gaps--what Kotter describes as barriers--that have the potential to delay, block, or hamper the change to an energy efficient culture. Smartly, the E2O conducted a Doctrine, Organization, Training, Material, Leadership and Education, Personnel, Facilities (DOTMLPF) evaluation of the gaps and approaches to solutions for each.[55] The evaluation covered the areas that Kotter explicitly warned could derail change, structures, skills, systems and supervisors.

First, the E2O recommended updating the Marine Corps' organizational structure to "ensure that E2W2 is properly considered in mission planning and decision making, and to provide operational flexibility and self-sufficiency on the distributed battlefield."[56] Updates recommended include adding utility planners to integrate E2W2 planning throughout the planning processes. The E2O also looked at evaluating the Table of Equipment (T/E) for possible adjustment after fielding energy efficient equipment.

The E2O identified skills that were lacking either in the number of personnel required or in the skill sets they possessed. For example, the results from the study concluded that more "utilities water technicians are needed to conduct water system operations, testing and maintenance and additional Navy corpsmen are needed to conduct water sampling, field testing, certification, and preventative maintenance training in direct support to the battalion level and below."[57] The results also highlighted the need for additional skills in waste and hazardous waste management, E2W2 planners and trainers, and even the possibility of establishing new or modifying Marine Occupational Specialties (MOS) training standards to include skill sets to manage these E2W2 programs.

The E2O recommended numerous policy and doctrine changes to current Marine Corps systems to ensure processes are in place that enable and incentivize leaders to become energy efficient. Some of the recommendations include requirements for "Energy Key Performance Parameters and Key System Attributes" for all systems that produce or consume energy, water, or waste, and for the Total Force Management System database to capture power requirements of all USMC equipment accurately.[58] Leaders who are more aware of their unit's energy usage can take steps to mitigate and reduce their energy footprint.

The Marine Corps determined key areas requiring direct supervisory oversight to ignite and sustain the transformation. The Marine Corps' plans to educate the leadership in several specific areas will "instill an ethos that values energy and considers E2W2 efficiency to be critical to combat effectiveness."[59] These areas include awareness of their "individual and collective energy footprint; observing, analyzing, and acting on information regarding energy use; understanding the first, second, and third order effects of energy and water use on operations; and tradeoffs in the operational decision space."[60] As noted earlier, the E2O has already taken action to incorporate the energy ethos package into various schools and training. The Marine Corps, through Training and Education Command (TECOM), must continue to expand and integrate appropriate training and education into officer and enlisted professional military education.

The Marine Corps ExFOB mentioned earlier is an example of how the Marine Corps encourages broad based actions by various agencies. With support from the Marine Corps Expeditionary Energy Office (E2O), the Marine Corps Warfighting Lab,

Marine Corps Systems Command, CD&I's Combat Development Division, Training and Education Command, and the Office of Naval Research all contribute to breaking down barriers, testing new approaches, and integrating best solutions into the Marine Corps organization. [61] The ExFOB continually evaluates programs and encourages innovative ideas from Marines, civilian companies, and other agencies.

Thus, in each of the four areas, the Marine Corps identified areas of potential weakness and has taken significant steps to add or change the structure, skills, systems and supervisors to better align with the vision. As with any change, these will take time to implement fully. As the guiding coalition, the E2O plans to continue to issue policy guidance, begin doctrine changes to incorporate E2W2 elements, immediately engage leadership through training and education programs, and convene working groups to plan and synchronize DOTMLPF changes.

Indications place the Marine Corps currently at this stage of Kotter's eight-stage process. The CMC identified expeditionary energy usage as a priority and instilled a sense of urgency to change. He established a guiding coalition, and published a vision statement and strategy. Along with the E2O, the CMC continues to communicate the change vision at all levels in the Marine Corps. Many obstacles and barriers have been identified; however, improvements to these will take time and effort. The Marine Corps has incorporated many changes thus far, but many more changes are required. As the leadership continues to empower broad-based action, the Marine Corps will see successful changes that enable efficient and effective energy use.

Generating Short Terms Wins

Even though the bulk of its efforts focuses on stage five, the Marine Corps can claim to have made some progress in stage six, "generating short terms wins." Kotter warns that "complex efforts to change strategies or restructure businesses risk losing momentum if there are no short-term goals to meet and celebrate."[62] The key characteristic of short-terms wins is that they are visible to a large number of people, unambiguous, and clearly related to the change effort.[63] Leadership must actively create and manage these short-term wins to keep the momentum for change.

Beginning in March 2011, reports began to come back from the Marines deployed in combat who incorporated numerous changes to better employ and manage energy use. As one Marine deployed to Afghanistan reported on the effectiveness of solar powered gear, "our generators typically use more than 20 gallons of fuel a day. We are down to 2.5 gallons a day." He further added, "the system works amazing. By saving fuel for generators, it has cut back on the number of convoys, meaning less opportunity for one of our vehicles to hit an IED."[64] This is just one example of many reports from the battlefield on how energy saving equipment and processes positively affects the Marines. The Marines see and experience how effective use of energy equates to greater combat effectiveness. Continued success of these short terms wins will fuel the desire to change.

To keep the momentum progressing in a positive direction, the Marine Corps must continue to celebrate short-terms wins. As Marines see the benefits gained from the changes, they will be more likely to continue with the modifications knowing the

changes are making a difference. Taking an active approach to generating the wins, not just hoping for good results, will ensure the commitment remains solid.

Consolidating Gains and Producing More Change and Anchoring New Approaches

Stages seven and eight, “consolidating gains and producing more change,” and “anchoring new approaches in the culture,” follow next along Kotter’s change continuum. In stage seven, the guiding coalition must be ready to use the short-terms wins to push forward faster, generating even more initiatives that promote effective use of energy. Stage eight firmly establishes as a new ethos the equating of energy and resource efficiency with combat effectiveness. The Marine Corps still needs to work on inculcating this precept into the professional culture of the Marine Corps, but it has taken the first steps toward this goal. Declaring victory too soon can hinder future successes because people believe the change is complete before the new ethos and changes become common practice.

Conclusion

The President of the United States, the DOD, and the Marine Corps leadership believe that many benefits come from the efficient and effective use of energy. Lessening the logistical load through a reduction in fuel and water convoys will allow the operational forces to become faster even as they maintain a high level of lethality. The CMC recognizes the Corps must instill an ethos that equates effective use of energy to increased combat power; this requires a culture change.

An examination of the Marine Corps progress toward a culture change in the way Marines use and think about operational energy reveals great progress along Kotter’s eight-stage process. Stage 1: CMC has distinguished a crisis that Marines’ lives are

being lost due to an overreliance on logistic convoys for fuel and water. This crisis gives the Corps the reason and the urgency it needs to change. Astutely, the E2O spun the message more appropriate for the primary audience, the combat Marine. The message emphasizes how energy efficiency equates to increased combat power. Stage 2: The guiding coalition, the E2O, was established in 2009, and has led the change with its dedicated and persistent leadership team. The team has the right mix of leaders and managers. The addition of NPS master students will add to their expertise. There is little doubt that the team, with Col Charette's enthusiasm and perseverance, will keep the momentum going. Stage 3: The E2O spent almost two years developing the vision and strategy. This product provides an enduring vision that will guide the Corps throughout the change. The plan includes a solid strategy that lays out the goals to achieve the desired change. Stage 4: The CMC and E2O consistently have emphasized the vision and the need to change to an expeditionary, self-sufficient energy force to be more lethal. Touting the need to go back to Spartan roots, the message brings out the best of the current culture while shedding its heavy overcoat. Many articles and websites promulgate this vision and strategy. Of course, as Kotter warns, the vision is never really in threat of being over-communicated. The Marine Corps always can do more to communicate the need for change. This will come as the education and training programs become embedded throughout the Corps' PME and training courses. Stage 5: In the Energy Strategy, the Corps has identified the gaps and barriers that could impede success. The strategy also covered Kotter's four main obstacles - structure, systems, skills and supervisors - and included ways ahead neutralize the obstacles. Although many approaches remain in their infancy, some already have enjoyed great success.

These successes follow along the continuum and progress toward Kotter's next stage. The successes of efficient energy use on the battlefields of Afghanistan will propel forward the desire to change.

This analysis of Kotter's eight stages places the current progress of the Marine Corps toward an energy efficient ethos at Stage 5. All obstacles have not yet been eliminated. The existing culture of abundancy continues. Barriers and obstacles to developing a more relevant and appropriate approach to energy usage remain. The hardest part of changing a culture is getting rid of the old one. Approaches such as encouraging and rewarding the younger generation of Marines for effective energy use, and requiring leaders' performance evaluations to rate their energy usage, will help solidify the change.

Numerous similar actions can and are being taken currently by the Marine Corps to instill this culture change. The CMC will need to make tough choices during this time of budget constraints that encourage progress toward culture change, even though the upfront cost may be great. The commitment by the leadership and the empowerment of all to make changes will require the most effort but should prove to be the most beneficial. As the Marine Corps progresses through Stage 5 and then capitalizes on short-term wins in Stage 6, it will be on its way to a successful change. The likelihood of a positive transition will depend on the persistency in Stage 7, consolidating gains and producing more change, and, finally, the anchoring of the new approaches into the culture in Stage 8. As long as the leadership continues to place a premium on the value of energy efficiency in all aspects of its operation, the change to an energy culture that equates energy to combat effectiveness will be successful.

Endnotes

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